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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,242	12/05/2003	Henry S. Eilts	TI-35528	2464

23494 7590 08/24/2006

TEXAS INSTRUMENTS INCORPORATED
P O BOX 655474, M/S 3999
DALLAS, TX 75265

EXAMINER	
MILORD, MARCEAU	
ART UNIT	**PAPER NUMBER**
2618	

DATE MAILED: 08/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/730,242	Applicant(s) EILTS ET AL.	
	Examiner Marceau Milord	Art Unit 2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *05 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pirainen (US Patent 7031419 B2) in view of Richards et al (US Patent No 7079827 B2).

Regarding claims 1, 3-6, 8, Pirainen discloses a method of estimating (fig. 4 and fig. 6) a transmit channel through which a first wireless communication transceiver (600 of fig. 6) is to transmit to a second wireless communication transceiver (602 of fig. 6; col. 2, lines 45-65;col. 10, lines 39-67), comprising: providing information indicative of a relationship between said transmit channel and a receive channel through which the first wireless communication transceiver receives communications from the second wireless communication transceiver (col. 7, lines 21-60; col. 8, lines 3-42; col. 9, lines 13-58; col. 11, lines 3-44).

However, Pirainen does not specifically disclose the steps of combining said relationship information with further information to produce an estimate of said transmit channel; wherein

said providing step includes combining a further estimate of said transmit channel with an estimate of said receive channel to produce said relationship information; wherein said last-mentioned combining step includes representing said further transmit channel estimate and said receive channel estimate as first and second quantities, respectively, and determining a ratio of said first quantity to said second quantity, said relationship information including said ratio; wherein said further information includes a further estimate of said receive channel represented as a third quantity, said first-mentioned combining step including multiplying said ratio by said third quantity.

Richards et al, on the other hand, discloses a method for power control in an ultra wideband impulse radio system that includes transmitting an impulse radio signal from a first transceiver; receiving the impulse radio signal at a second transceiver; determining at least one performance measurement of the received impulse radio signal; and controlling output power of at least one of the first transceiver and the second transceiver in accordance with the at least one performance measurement. Furthermore, the signal evaluation function evaluates the signal quality, and quality measurement is provided to the power control algorithm. Power control algorithm then determines a power control update according to the current received signal quality measurement determined by signal evaluation function (col. 2, line 53- col. 3, line 33). This update is added to the signal data stream in the transmitter data multiplexer and then transmitted via transmitter to transceiver. Receiver of transceiver receives a data stream and demultiplexer separates the user data and power control command, sending the power control command to transmitter. These values are passed to the power control algorithm, which may combine this information with a BER measurement provided by a BER evaluation function. The

power control algorithm generates a power control update value according to one or more of the performance measurements (col. 19, lines 27-50; col. 20, lines 4-24). This value is combined with the information signal and sent to the transceiver, which is originating the received signal. The noise measurement is combined with the signal strength measurement to derive a signal to noise measurement. The noise value is combined with the signal strength value in a divide function to derive a signal-to-noise value result. This auto control signal is combined with a signal strength or SNR measurement determined by the signal evaluation function of the other transceiver and fewer filtered by combiner/filter to produce an output level value used to control the output level of transmitter. This output level value is combined with the signal strength and SNR measurements by multiplexer, and then further combined with the transmitted data stream by transmit data multiplexer (col. 21, line 41- col. 22, line 22; col. 24, lines 33-57; col. 26, lines 34-61; col. 29,line 45- col. 30,line 30). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Richards to the communication system of Pirainen in order to measure, evaluate the signal quality, and quality measurements for the purpose of determining power control update.

Regarding claim 2, Pirainen as modified discloses a method of estimating (fig. 4 and fig. 6) a transmit channel through which a first wireless communication transceiver (600 of fig. 6) is to transmit to a second wireless communication transceiver (602 of fig. 6; col. 2, lines 45-65;col. 10, lines 39-67), wherein said further information includes an estimate of said receive channel (col. 7, lines 21-34;col. 9, lines 15-51).

Regarding claim 7, Pirainen as modified discloses a method of estimating (fig. 4 and fig. 6) a transmit channel through which a first wireless communication transceiver (600 of fig. 6) is

to transmit to a second wireless communication transceiver (602 of fig. 6; col. 2, lines 45-65;col. 10, lines 39-67), wherein said further information includes an estimate of said receive channel (col. 7, lines 21-34;col. 9, lines 15-51).

Regarding claim 9, Pirainen as modified discloses a method of estimating (fig. 4 and fig. 6) a transmit channel through which a first wireless communication transceiver (600 of fig. 6) is to transmit to a second wireless communication transceiver (602 of fig. 6; col. 2, lines 45-65;col. 10, lines 39-67), wherein said providing step includes the first wireless communication transceiver transmitting a first communication to the second wireless communication transceiver, and the second wireless communication transceiver transmitting a second communication to the first wireless communication transceiver in response to its receipt of the first communication (col. 8, lines 3-42; col. 9, lines 13-58; col. 11, lines 3-44).

Regarding claim 10, Pirainen as modified discloses a method of estimating (fig. 4 and fig. 6) a transmit channel through which a first wireless communication transceiver (600 of fig. 6) is to transmit to a second wireless communication transceiver (602 of fig. 6; col. 2, lines 45-65;col. 10, lines 39-67), wherein said providing step includes using the second communication to estimate said receive channel and using the first communication to estimate a further receive channel through which the first communication was received at the second wireless communication transceiver (col. 8, lines 3-42; col. 9, lines 13-58; col. 11, lines 3-44).

Claim 11 contains similar limitations addressed in claims 1, 6 and 8, and therefore is rejected under a similar rationale.

Regarding claim 12, Pirainen as modified discloses a method of estimating (fig. 4 and fig. 6) a transmit channel through which a first wireless communication transceiver (600 of fig. 6) is

to transmit to a second wireless communication transceiver (602 of fig. 6; col. 2, lines 45-65;col. 10, lines 39-67), wherein said second wireless communication transceiver transmitting step includes the second wireless communication transceiver transmitting said second communication immediately in response to its receipt of the first communication (col. 8, lines 3-42; col. 9, lines 13-58; col. 11, lines 3-44).

Regarding claims 13, Pirainen discloses a wireless communication apparatus (fig. 4 and fig. 6), comprising: an antenna (612 or 614 of fig. 6); a transmitter (610 of fig. 6) coupled to said antenna (612 of fig. 6) ; a receiver (618 of fig. 6) coupled to said antenna (620 of fig. 6; col. 10, lines 40-55); and a transmit channel estimator coupled to said transmitter and said receiver for estimating a transmit channel through which said transmitter is to transmit to a further wireless communication apparatus (col. 2, lines 45-65;col. 10, lines 39-67; col. 11, lines 20-41), said transmit channel estimator including an input for receiving information indicative of a relationship between said transmit channel and a receive channel through which said receiver receives communications from the further wireless communication apparatus (col. 7, lines 21-60; col. 8, lines 3-42; col. 9, lines 13-58; col. 11, lines 3-44).

However, Pirainen does not specifically disclose the features of a combiner coupled to said input for combining said relationship information with further information to produce an estimate of said transmit channel.

Richards et al, on the other hand, discloses a method for power control in an ultra wideband impulse radio system that includes transmitting an impulse radio signal from a first transceiver; receiving the impulse radio signal at a second transceiver; determining at least one performance measurement of the received impulse radio signal; and controlling output power of

at least one of the first transceiver and the second transceiver in accordance with the at least one performance measurement. Furthermore, the signal evaluation function evaluates the signal quality, and quality measurement is provided to the power control algorithm. Power control algorithm then determines a power control update according to the current received signal quality measurement determined by signal evaluation function (col. 2, line 53- col. 3, line 33). This update is added to the signal data stream in the transmitter data multiplexer and then transmitted via transmitter to transceiver. Receiver of transceiver receives a data stream and demultiplexer separates the user data and power control command, sending the power control command to transmitter. These values are passed to the power control algorithm, which may combine this information with a BER measurement provided by a BER evaluation function. The power control algorithm generates a power control update value according to one or more of the performance measurements (col. 19, lines 27-50; col. 20, lines 4-24). This value is combined with the information signal and sent to the transceiver, which is originating the received signal. The noise measurement is combined with the signal strength measurement to derive a signal to noise measurement. The noise value is combined with the signal strength value in a divide function to derive a signal-to-noise value result. This auto control signal is combined with a signal strength or SNR measurement determined by the signal evaluation function of the other transceiver and fewer filtered by combiner/filter to produce an output level value used to control the output level of transmitter. This output level value is combined with the signal strength and SNR measurements by multiplexer, and then further combined with the transmitted data stream by transmit data multiplexer (col. 21, line 41- col. 22, line 22; col. 24, lines 33-57; col. 26, lines 34-61; col. 29,line 45- col. 30,line 30). Therefore, it would have been obvious to one of ordinary

skill in the art at the time the invention was made to apply the technique of Richards to the communication system of Pirainen in order to measure, evaluate the signal quality, and quality measurements for the purpose of determining power control update.

Regarding claim 14, Pirainen as modified discloses a wireless communication apparatus (fig. 4 and fig. 6), provided as a MIMO apparatus (fig. 3; col. 3,lines 41-53;col. 7,lines 19-34).

Regarding claims 15, Pirainen as modified discloses a wireless communication apparatus (fig. 4 and fig. 6), wherein said further information includes an estimate of said receive channel (col. 7, lines 21-34;col. 9, lines 15-51).

Regarding claims 16-20, Pirainen discloses an apparatus for estimating (fig. 4 and fig. 6) a transmit channel through which a first wireless communication transceiver (600 of fig. 6) is to transmit to a second wireless communication transceiver (602 of fig. 6; col. 2, lines 45-65;col. 10, lines 39-67), comprising: an input for receiving information indicative of a relationship between said transmit channel and a receive channel through which the first wireless communication transceiver receives communications from the second wireless communication transceiver (col. 7, lines 21-60; col. 8, lines 3-42; col. 9, lines 13-58; col. 11, lines 3-44).

However, Pirainen does not specifically disclose the features of a combiner coupled to said input for combining said relationship information with further information to produce an estimate of said transmit channel, including a further combiner having an input for receiving a further estimate of said transmit channel and for receiving an estimate of said receive channel, said further combiner for combining said further estimate of said transmit channel with said estimate of said receive channel to produce said relationship information; wherein said further combiner uses first and second quantities to represent said further transmit channel estimate and

said receive channel estimate, respectively, and wherein said further combiner is for determining a ratio of said first quantity to said second quantity, said relationship information including said ratio; wherein said further information includes a further estimate of said receive channel represented as a third quantity, said first-mentioned combiner for multiplying said ratio by said third quantity

Richards et al, on the other hand, discloses a method for power control in an ultra wideband impulse radio system that includes transmitting an impulse radio signal from a first transceiver; receiving the impulse radio signal at a second transceiver; determining at least one performance measurement of the received impulse radio signal; and controlling output power of at least one of the first transceiver and the second transceiver in accordance with the at least one performance measurement. Furthermore, the signal evaluation function evaluates the signal quality, and quality measurement is provided to the power control algorithm. Power control algorithm then determines a power control update according to the current received signal quality measurement determined by signal evaluation function (col. 2, line 53- col. 3, line 33). This update is added to the signal data stream in the transmitter data multiplexer and then transmitted via transmitter to transceiver. Receiver of transceiver receives a data stream and demultiplexer separates the user data and power control command, sending the power control command to transmitter. These values are passed to the power control algorithm, which may combine this information with a BER measurement provided by a BER evaluation function. The power control algorithm generates a power control update value according to one or more of the performance measurements (col. 19, lines 27-50; col. 20, lines 4-24). This value is combined with the information signal and sent to the transceiver, which is originating the received signal.

The noise measurement is combined with the signal strength measurement to derive a signal to noise measurement. The noise value is combined with the signal strength value in a divide function to derive a signal-to-noise value result. This auto control signal is combined with a signal strength or SNR measurement determined by the signal evaluation function of the other transceiver and fewer filtered by combiner/filter to produce an output level value used to control the output level of transmitter. This output level value is combined with the signal strength and SNR measurements by multiplexer, and then further combined with the transmitted data stream by transmit data multiplexer (col. 21, line 41- col. 22, line 22; col. 24, lines 33-57; col. 26, lines 34-61; col. 29,line 45- col. 30,line 30). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Richards to the communication system of Pirainen in order to measure, evaluate the signal quality, and quality measurements for the purpose of determining power control update.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kuffner discloses a multiple mode RF communication device, such as a transmitter, receiver or transceiver that has a first RF communication resource that communicated by default using s first communication mode.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marceau Milord whose telephone number is 571-272-7853. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew D. Anderson can be reached on 571-272-4177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MARCEAU MILORD

Marceau Milord
Primary Examiner
Art Unit 2618

M Milord
MARCEAU MILORD
PRIMARY EXAMINER
8-15-06